A Case on ERP Custom Add-On in Taiwan: Implications to System Fit, Acceptance and Maintenance Costs

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ABSTRACT

Enterprise Resource Planning (ERP) systems are complete and complex information systems that consist of firms’ business best practices. This study examines an ERP custom-made add-on/bolt-on system of a medium-sized computer memory producer with global business units around the world, and investigates implications of the customized system from the perspectives of system fit, user attitude and acceptance, and subsequent maintenance and upgrade costs. The authors adopted a rich descriptive case study method and conduct a cost and benefit analysis prediction of subsequent maintenance and upgrade costs on the system. The empirical data indicates that although developing an add-on may create integration problems and/or compatibility problems with the ERP system, in overall, the system users accept the system better as the add-on helps in improving their job performance. Also, even though having a custom development does create additional costs in this case study, this does not necessarily cost more than not having it. Instead, having an idiosyncratic system may actually transfer a lot of benefits to the company. This is the first empirical study showing why custom development is favored by SMEs. These results and implications can be valuable to IT managers and top management when making ERP customization decisions.

Keywords: Add-On, Case Study, Cost and Benefit Analysis, Enterprise Resource Planning (ERP) Misfit, ERP Acceptance, ERP Lifecycle Costs, Ongoing ERP Maintenance Cost, Package Software, Small-Medium Enterprises, System Fit

INTRODUCTION

Daily business operations involve many tasks, and the completion of a task is affected by the task executor’s requirements or needs, tools (such as a software system), and other environmental factors (Dishaw & Strong, 1999). A successful task, therefore, requires excellent collaboration between these factors. As information technology continuously improves, hardware costs drop while performance increases. On the other hand, as internet usage expands, software applications move online, and even complex applications such as enterprise resource planning (ERP) systems can be accessed and rented through the web (Su, Liao, Guo, & Gao, 2008). Businesses, including small enterprises, are
completing various tasks and jobs using computer software, and are becoming highly reliant on them (Rajendran & Elangovan, 2012).

As information technology continuously improves alongside the ever-increasing market competitive pressure, more organizations are implementing information systems such as an enterprise resource planning (ERP) system to assist personnel at every organizational level to complete their assigned tasks (O’Brien & Marakas, 2008). Information provided by these information systems is becoming more crucial than ever throughout all management levels in this knowledge-capital era, and organizations are using it to improve both work efficiency and effectiveness (or performance) through better informed decision-making. Information technology is not only used to support daily clerical work and automate industrial processes but also to develop various information systems that satisfy different work requirements. ERP systems are an example of a mega IS that is meant to satisfy various functional areas in an organization using a single platform and system.

Unfortunately, due to the nature of packaged software, ERP systems can rarely fully satisfy all unique organizational business requirements and provide perfect individual solutions to improve all elements of work performance and unique competitive advantage. Various tailoring methods such as code modifications, configurations, and add-ons/bolt-ons, among others, may be required to allow an ERP system to function efficiently within an organizational operating environment and to minimize or eliminate misfits found in the system (Brehm, Heinzl, & Markus, 2001). In making customization and custom development decisions, client organizations consider many factors, especially in terms of their potential impact on future ERP system maintenance and upgrade costs, as claimed within the trade press and academic literature (Ng, 2001; Ng & Gable, 2010). This represents a typical dilemma that ERP client organizations often face.

In an attempt to illustrate a real picture of the impact of custom developments in an ERP system and other issues surrounding it, this research study aims to provide the implications related to custom development (i.e., an add-on or bolt-on system) from the perspectives of (i) system fit, (ii) user attitude and acceptance, and (iii) subsequent maintenance and upgrade costs. An add-on or bolt-on system consists of modules of program codes that are plugged into the ERP system’s user exits. In this study, we adopted the case study method to provide rich and in-depth descriptions of the scope and the impacts of the ERP misfit problems facing the case organization, and how the custom development (i.e., an add-on system) is designed to solve the highlighted misfit problems. Then, survey was conducted to collect data on system fit (using well-established task-technology fit questions), user attitudes and acceptance of the system (using a popular technology acceptance survey instrument). Finally, interviews were carried out with the top-level management to obtain the relevant estimations for conducting a cost and benefit analysis of subsequent maintenance and upgrade costs regarding the add-on/bolt-on system.

LITERATURE REVIEW

Misfits of Information System

Lucas et al. (1988) define the ‘misfits’ problem of adopting packaged software as the gaps between the functionality offered by the package and that required by the adopting organization. There are basically two options available for organizations facing the misfit problem: they can choose to adapt their internal business processes to fit the functionalities of the packaged software and live with the shortfall, or choose to incorporate workarounds and customize the packaged software to meet their idiosyncratic business requirements.

Based on research from Soh et al. (2000), there are three types of misfits: data, functional, and output. Data misfits are defined as incompatibilities between organizational requirements and packaged software in terms of data format or the relationship among entities as represented in the underlying data model; thus, they are...
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